

X-Band Waveguide Interface Units

Model Numbers MDU1900, MDU1910, MST1950



Key Features

- Low Cost
- Standard Waveguide interface
- WG16/WR90/R100 with UBR100 flange
- Rugged, reliable construction
- Low Power consumption
- High Sensitivity
- RoHS compliant

Applications

- Traffic Control
- Automatic Door Openers
- Speed Measurement
- Direction of motion detection
- Energy Management systems
- Sports Radar Guns

The Microwave Solutions MDU (Motion Detector Unit) is an X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion.

The unit, contained in a rugged diecast housing, features a dielectric resonator stabilised FET oscillator, which provides stable operation over a broad temperature range in either CW or low duty cycle pulse mode. The unit is available as a dual channel or single channel transceiver or as a transmitter.

Operation

The basic principle of operation consists of detecting the frequency shift between a transmitted and a received signal reflected back from a moving object within the field of view of the unit.

The MDU1900 unit produces two low level output signals which can be amplified and processed to provide an audible or visual alarm. These signals are nominally orthogonal in phase and the direction of the detected target can be ascertained from the lead/lag between the two outputs

The MDU1910 unit produces a single low level output signal which can be amplified and processed to provide an audible or visual alarm.

The MST1950 unit includes the transmitter only and can be used with a separate receiver as one end of a microwave link.

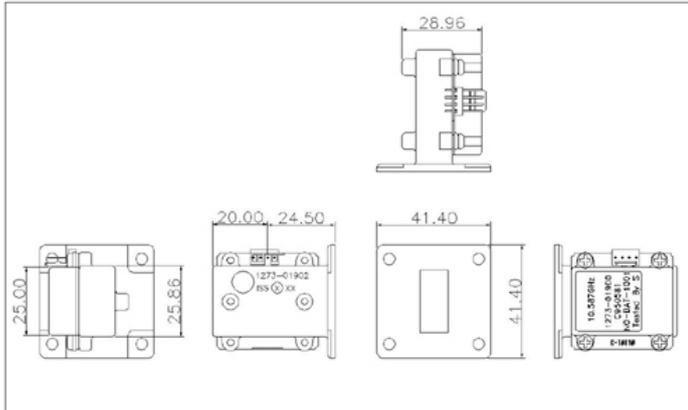
All the units employ low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

Available Modules

Model	Country	Frequency	Comments	Order Code
MDU1900	Holland, Belgium, Italy, USA	10.525 GHz	Dual Orthogonal Mixers	C950503
	UK	10.587 GHz		C950501
MDU1910	Holland, Belgium, Italy, USA	10.525 GHz	Single Mixer	C960503
	UK	10.587 GHz		C960501
MST1950	Holland, Belgium, Italy, USA	10.525 GHz	Transmit only	C970503
	UK	10.587 GHz		C970501

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Mechanical Characteristics

Weight	85 g
Tab Connections	0.1" spacing

Environmental Characteristics

RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	3 dB
Frequency/Temp. Coefficient (over operating temp. range)	10 MHz
Operating Temperature	-10° C to +55° C
Storage Temperature	-30° C to +70° C

NOTES Detection range is dependent on size and reflectivity of target and S/N ratio. Doppler shift at 10.687GHz is 70 Hz per m/s target velocity.
Unit functions over -30° C to +70° C, but performance may be degraded above +55° C

Electrical Characteristics

Transmitter

Frequency	See table over
Operating Voltage	+5 V ± 0.25 V
Operating Current (CW)	60mA (max) 50mA (typ)
Frequency Setting Accuracy	3MHz
Frequency Pushing (Max.)	3MHz/volt
Power Output	(MDU1900/1910) (MST1950)
Power variation with volts	3dB/v max.

Pulse Mode Operation

Average Current (5% DC)	2.5 mA typ.
Settling time to full power	3 µsecs max.
Duty Cycle (Min.)	1%

Receiver 3Hz to 80Hz bandwidth

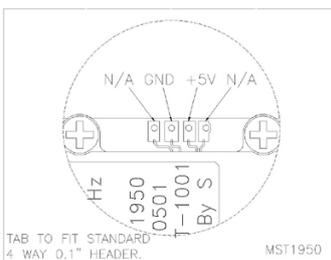
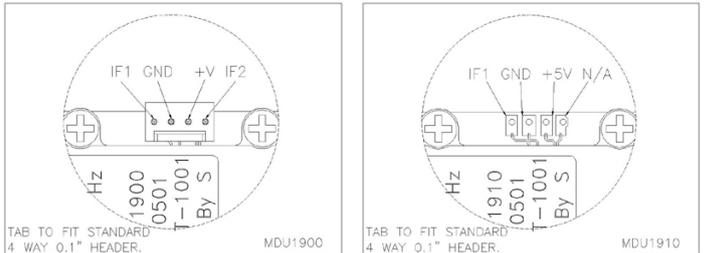
Output signal*	>1mV p-p
Noise	< 150 µV p-p

* with standard test system

Output Connection

Waveguide	WG16/WR90/R100
Waveguide flange	UBR100

Connections



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